MANAGEMENTUL SERVICIILOR DE TRANSPORT PUBLIC DE CĂLĂTORI ÎN ROMÂNIA ÎN CONDIŢIILE CRIZEI ECONOMICE

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MANAGEMENT OF PUBLIC PASSENGER TRANSPORT SERVICES DURING ECONOMIC CRISIS

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Abstract
Urban transport and especially its core component, local public transport of passengers, is one of the most important functions of a city, because through it is ensured the unity and coherence of all its activities. In this context, the article presents the main characteristics of urban transportation in Romania.

Keywords**:** public transport, passenger transport, cities, Romania.

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Rezumat
Transportul urban și, în special componenta sa principală, transportul public local de călători, constituie una dintre cele mai importante funcții ale unui oraș, deoarece prin intermediul acestuia se asigură unitatea și coerența tuturor activităților sale. În acest context, articolul prezintă principalele caracteristici ale trasportului urban din România.

Cuvinte cheie: transport public, transport de călători, oraşe, România

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1. INTRODUCTION

Transport, nowadays, is a compulsory element in life, as it offers society members options in conveyance, communication, perception and assimilation, of almost everything that civilization has to offer. Modern civilization, characterized by a fast rhythm of development in various areas, by a massive change in material and spiritual values, implies a continuous goods' shifting, a permanent movement of people from place to place.

The evolution of transport, by new and improved means of transport, eliminates economical insulation, allows the specialization and change of activities, the build-up of national and global market and implicitly the development of intern and international commerce, as an effect of globalization.

The urban transport and particularly it's basic component, local public transport for people, represents one of the most important functions of the city, because it insures unity and coherence of all it's activities.(Ion,2008).

All over the world, public transport is primary and it's performance is recognized as a public utility. Germany, for example, has had more success in promoting public transport than other countries, in the last 40 years. The explanation of this fact consists in the better quality of the urban transport system, in this way encouraging the citizens to use with full trust the offered transport services. It is a known fact that approximately 13 % of the Germans use the public transport daily, and 25 % use it at least once per week. (Buehler, 2009).

All over the world, the study and perfection of diverse types of vehicles and devices of urban transport, are being worked on intensely.

The main areas in which the efforts are made are the following:

- The increasing adaptability to different traffic conditions;
- Reducing all types of fumes;
- The creation of efficient new technologies under economical aspects;
- Increasing the passengers' comfort during the conveyance;

Increasing the medium conveyance speed to raise the transport volume and to reduce the travelling time

The public transport network reflects the development and civilization degree of a city and it represents a very important aspect for a traveler without a personal car.

The public transport for people is characterized by the following particularities:

- Almost any person participates in way or another in the transport for people;
- The transport services for people are independent;
- The public transport for people is the common element in different areas, such as: urban development, traffic agglomeration, problems concerning pollution, traffic safety etc.
- The public transport for people is also characterized by the fact that:
- The public property is dominant in the transport area;
- The bus is the main mean of transport;
- The same type of transport presents variability and simultaneity;
- It can be substituted by other means of transport by the fact that the investment has a different cost for various ways of transport;

The transport market is very complex.

Although the transport for people is cheap, rapid and efficient, it generates a lot of problems, such as ecological and social problems: the agglomeration and quality of life, the city planning, the traffic organization, problems concerning the energyAlthough the transport for people is cheap, rapid and efficient, it generates a lot of problems, such as ecological and social problems: the agglomeration and quality of life, the city planning, the traffic organization, problems concerning the energy).

The fluctuations concerning the utilization of public means of transport from the last years are age, sex, location and income dependent and also influenced by the holding of a personal mean of transport. Taking this into consideration it turns out that old people travel less in comparison with the youth, on an average, women are spending less time travelling than men, the young under 20 years are using frequently the public transport.(Metz,2005).

In the last years, the area of global public transport has became a competitive market. This fact is due on one hand to the increasing population density in the urban areas, and on the other hand to the proliferation of transport network. Hence, a factor which has earned a special importance, is the quality of public transport (Balbo and Pinson, 2005).

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The quality of transport depends on: the human factor, the degree of endowment and technical preparation of the vehicles, the informational system for the travelling public, the tracing of vehicles' activity on routes etc.

The quality of a journey in transportation can be evaluated by numerous requirements: safety, regularity, rhythmicity and punctuality, rapidity and comfort, the capacity of dealing with new requirements promptly, the civilized attitude of the staff, the reduced time of the journey etc (Ion,2008). A first condition of a journey's quality consists in the complete information of the passengers regarding the schedule of vehicles' circulation, the tickets' and subscriptions' procurance must be made easy and efficient.

The quality in the area of passengers' transportation has some specific traits which derives from the nature of the transported "object" – the man, with his specific requirements. The transportation process for passengers begins from the moment of ticket's procurance, continues with the moment of standing and waiting in the departure station, with the accomplishment of the journey and it ends with the passing through the arrival station and it's abandon. This assignation is necessary because often the journey's comfort is not assured right at the adjacent stages of the journey (for example the lack of ticket agents, in the area of halt stations, for the procurance of the ticket. In Bucharest exists 2044 of halt stations, of which only 240 come with ticket agents).

The quality of the journey in the means of transportation lies in the degree of safety, comfort and trust. The development of motor vehicles from the last decades illustrates the way in which performance, trust and degree of comfort have developed together, due to adapting to the customers' new needs and requirements. Another contributing factor when it comes to the quality of a public service resides in the development of an effective informational system for travelers concerning the routes and time tables etc. (Metz,2005).

Moreover the quality of a journey is influenced by the cramped traffic, the amount of traffic and of delays caused by infrastructural labor and by traffic- related accidents. This cramped traffic is reflected both upon drivers and travelers alike, through stress and time wasted in traffic. It is imperiously necessary to improve the way traffic is managed (traffic management) to attenuate the chaos of current traffic. (Pucher, Korattyswaropam, Mittala and Ittyarah, 2002

An important factor of service quality is the density of traffic and the hours of departure-arrival of passenger-transporting vehicles. Also the reduction of a journey's duration, by increasing the commercial and exploitation speed. Increasing the commercial speed, which depends on the technical state of the motor vehicle, the driver's training, the state of the roads and especially on the good

management concerning the reduction of standage timing of passengers' boarding-unboarding, is a qualitative factor of major importance.

The quality of public transportation is especially evidenced by the efficient planning of traffic and of traffic rules. The efficient planning of traffic, which is able to satisfy the demand and the quality requirements is a prime indicator which measures the total quality of given public transportation services.

An efficient planning implies both the establishment of an easy to monitorize internal order and the credibility offered through which the customers can describe the service as being fiable and superior. (Boudali, Ben Jaafar and Ghedira, 2008).

The series of measuring indicators for public transportation, differ from one author to the next. One point of view is that the indicators which are to be followed are : punctuality, passenger information, the preocupation for the permanent satisfaction of travellers' requirements, discipline and civic duty in the supply of services, ticket agent's accountability and improving the transportation stations to support the disabled people.(Dosek, 2005).

The public transportation system must be sufficiently convincing as to offer a service level in order to make the highest possible number of personal automobile users to choose public transportation. This implies that the public transportation service must adapt to customers requirements to become more desirable. The quality of service is perceived as an important factor which influeneces the customer demand. (Beirão and Cabral, 2007).

In order for the citizens of a country to enjoy the quality of the available public transportation service, many experts from different areas of activity must contribute.(Preston, 2009)

An efficient public transportation is that in which the delays caused by the intervals of the time needed to change the means of transportation are reduced to minimum. The desirability of the transportation network is closely bound to the accuracy of intermodal links, however the links suggests the passenger transfer from a connecting line to the next which may generate important amounts of waiting time, especially in the case of lower frequency lines. To avoid the situations in which passengers miss their transfers, it is possible to delay the departures of all vehicles until the arrival of the next one's, however in this cases the delay is propagated throughout the entire length of the network, which leads to inefficiency. On the other hand if all vehicles depart on time, the only affected passengers will be those who miss the connection, thus lowering their number, but the waiting time for them will increase considerably. (Heilporn, De Giovanni, Labbé, 2008).

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An effective transportation system has the following goals :

- The supply of a sufficient capacity of transportation ;
- The achievement of accesibility ;
- The assurance of service on any weather;
- An acceptable level of comfort for passengers ;
- Minimal negative effects upon the tranquility of the inhabitants and upon the environment.

Another indicator of the quality of public transportation refers to the technological level of vehicles. Although many people still do not believe in automatic vehicle safety it is proven that in developed world cities (Orlando, Pittsburgh, Zurich, Rome, Tokyo, London etc.), it is a way to identify the quality of public transportation services. These systems do not require drivers and vehicles are guided by a control system and require smaller electric vehicles, for a limited number of passengers traveling with no intermediate stations (Bernasconi, Strager, and Hasenmyer Maskey, 2009).

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2 URBAN PASSENGERS TRANSPORTATION IN ROMANIA

Romania ranks 123rd in terms of road quality, in a top by the World Economic Forum (WEF). Romania is well below Hungary (64th place in the world), before Romania ranking countries such as Albania, Bulgaria, Cambodia and Kirghistan and African countries such as Burundi,Tanzania and Zambia. (Automarket.ro) Urban transportation is realized in most cities by means of buses and minibuses. There are medium and large cities where transport is realized with trams and trolleybuses. In Romania, the passenger transportation, as it results in Tables 1 and 2, public ownership is dominant. It is also apparent that the bus has the largest share in the urban passenger movements.

TABLE 1 –LOCAL PUBLIC TRANSPORTATION OF PASSENGERS IN ROMANIA BY MEANS OF TRANSPORTATION AND BY OWNERSHIP CONDITION, IN 2005 (PER THOUSANDS OF PASSENGERS)

Way of transport \ Ownership condition	Urban transportation passengers	Tram	Bus	Trolley bus	Subway
Total- percentage	2.172.926 100,0	741.388 100,0	1.069.039 100,0	235.531 100,0	127.968 100,0
State majority - percentage	1.991.251 91,64	741.388 100,0	886.364 82,99	235.531 100,0	127.968 100,0
Private majority- percentage	181.675 8,36	- -	181.675 17,01	- -	- -

Sursa: www.insse.ro/anuar_2006, Anuarul Statistic al Romaniei

TABEL 2 –THE IMPORTANCE OF MEANS OF TRANSPORTATION IN THE REALISING LOCAL PUBLIC PASSENGERS TRANSPORTATION IN ROMANIA, IN 2005 (PER THOUSANDS OF PASSENGERS)

Way of transport\ Sizes	Urban passengers transportation total	Tram	Bus	Trolley bus	Subway
Absolute Relative %	2.172.926 100,0	741.388 34,12	1.069.039 49,16	235.531 10,84	127.968 5,89

Sursa: www.insse.ro/anuar_2006, Anuarul Statistic al Romaniei

The public transportation in Bucharest

Romania's capital Bucharest is situated in the south-east of the country. According to the latest data released by the National Institute of Statistics, Bucharest's population is 1.94 million inhabitants, making Bucharest the sixth largest EU capital by size. It has an area of 228 kmp and a density of 8074.6 inhabitants per kmp

Bucharest has the largest transportation network in Romania and among the largest in Europe. It is divided into surface transportation (buses, trams, trolley buses, minibuses) and underground transportation-by subway.

Surface transport in Bucharest is the responsibility of the Regia Autonoma de Transport Bucuresti (RATB) and includes an extensive system of buses, trolleybuses, trams and light subways. RATB network is among the densest in Europe, being the fourth largest on the continent. Instead the system is often very busy, being frequently used. Just like the subway, the RATB system is currently undergoing a phase of renewal, characterized by the conversion of tram lines into light rail lines, and purchasing new vehicles, especially buses.

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The area supplied by surface public means of transportation of the RATB is 1811 km, of which urban area covers 228 km. The streets of Bucharest are organized in ring-radial system, being composed of 5340 streets with a total length of 1821 km.

The inventory park of vehicles, in 2009, amounted to 2266 vehicles, there being 161 lines of public transportation. The length of transportation network was 740 km, double track, and the total length of routes, of 1946 km, double track (with 2.64% higher than in 2008). Figure 1 shows the general map of the routes in Bucharest.

In 2009 the RATB network carried 2.6 million passengers per day (average daily number), and 790 million throughout the year.

There are 2044 halt stations for surface public means of transportation of RATB, divided according to the type of vehicle as:

- tram: 598
- trolley: 89
- Bus: 1100
- common stations (bus + trolley): 257

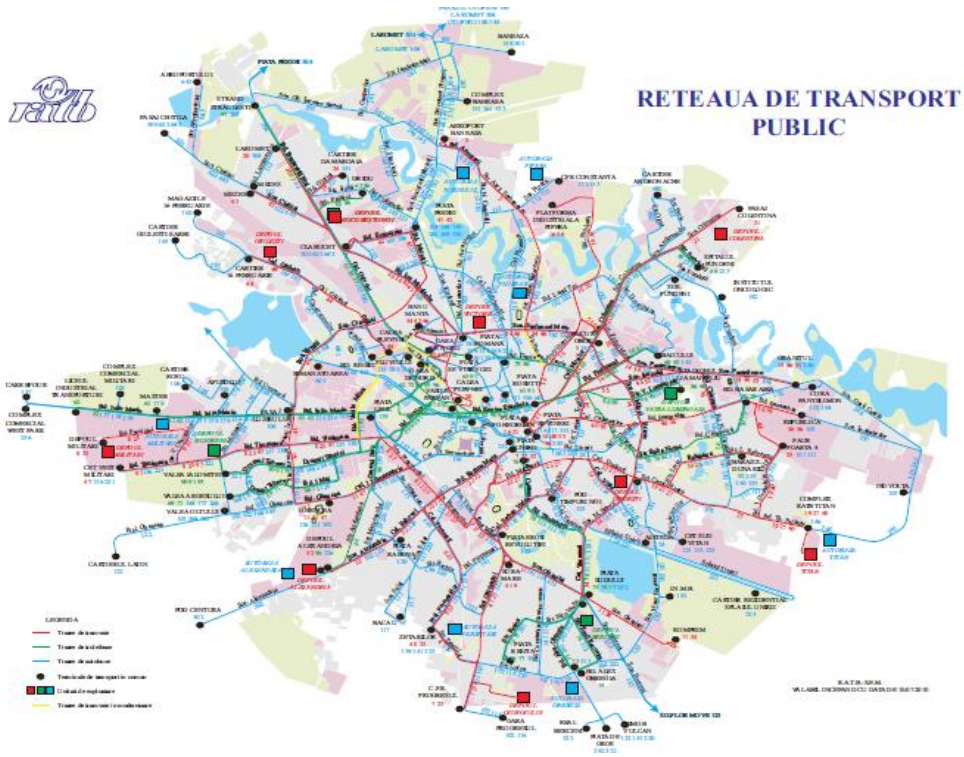

Figure 1 –the general map of routes for public transportation in bucharest

FIGURE 2 SHOWS THE MAP OF TRANSPORT ROUTES FOR TRAMS IN BUCHAREST. THEIR NUMBER WAS 513 IN 2009, AND THE NUMBER OF TRANSMISSION LINES WITH THIS VEHICLE, OF 25. TRAM NETWORK LENGTH IS 143 KM, DOUBLE TRACK, AND ROUTE LENGTH OF 243 KM, DOUBLE TRACK, WITH 3.85% HIGHER THAN IN 2008.

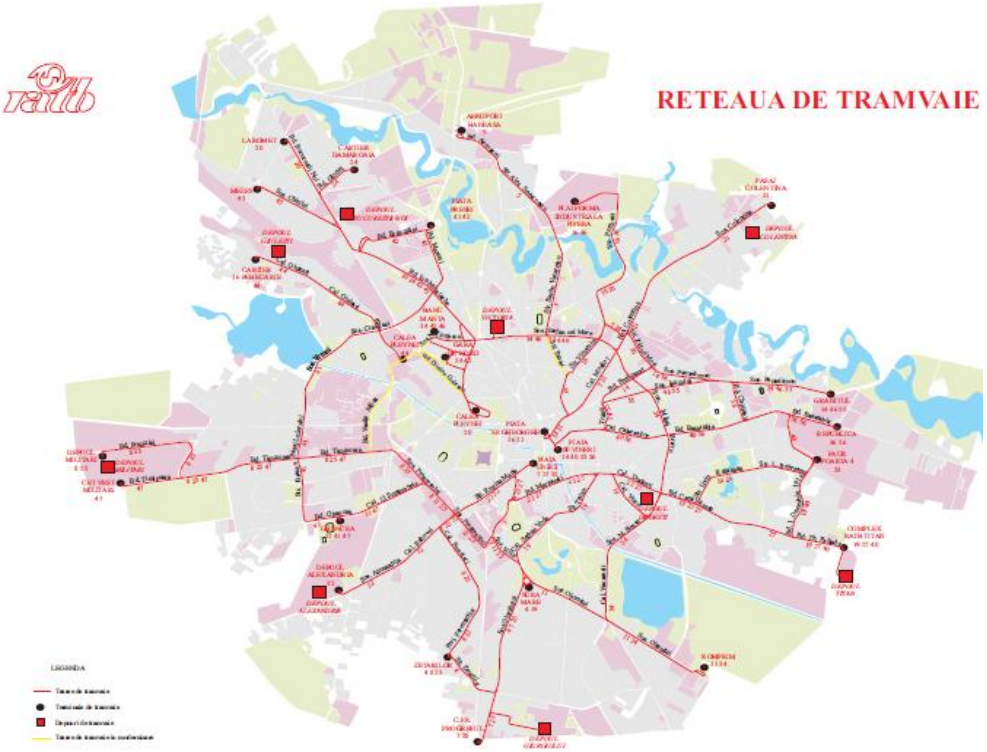

FIGURE 2 – THE MAP OF TRAMROUTES IN BUCHAREST

RATB is equipped with a total of 302 buses, that assures the passengers' transportation on a total of 20 lines. Figure 3 shows the map of trolley tracks. Network length is 76 km, double track, while the total length of routes is 159 km, double track.

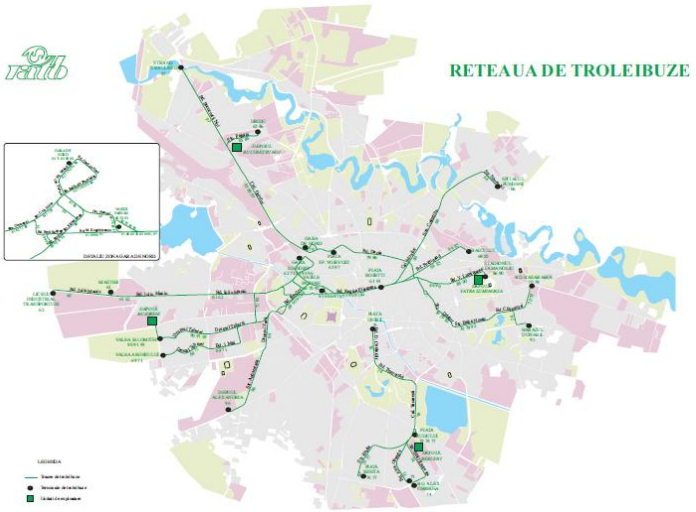

FIGURE 3 –THE MAP OF TROLLEY BUSS IN BUCHAREST

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In Bucharest, the most frequently used means of public transportation of passengers is the bus, therefore RATB park inventory includes the largest number of all types of public passenger transportation. In figure 4 is presented the map of bus routes in Bucharest.

There are 1451 buses, that assure the passengers' transportation on a total of 116 transmission lines. The length of the transportation network in case of buses is 689 Km. double track, and route length in km. double track is 1544, with 2.73% higher than the year 2008.

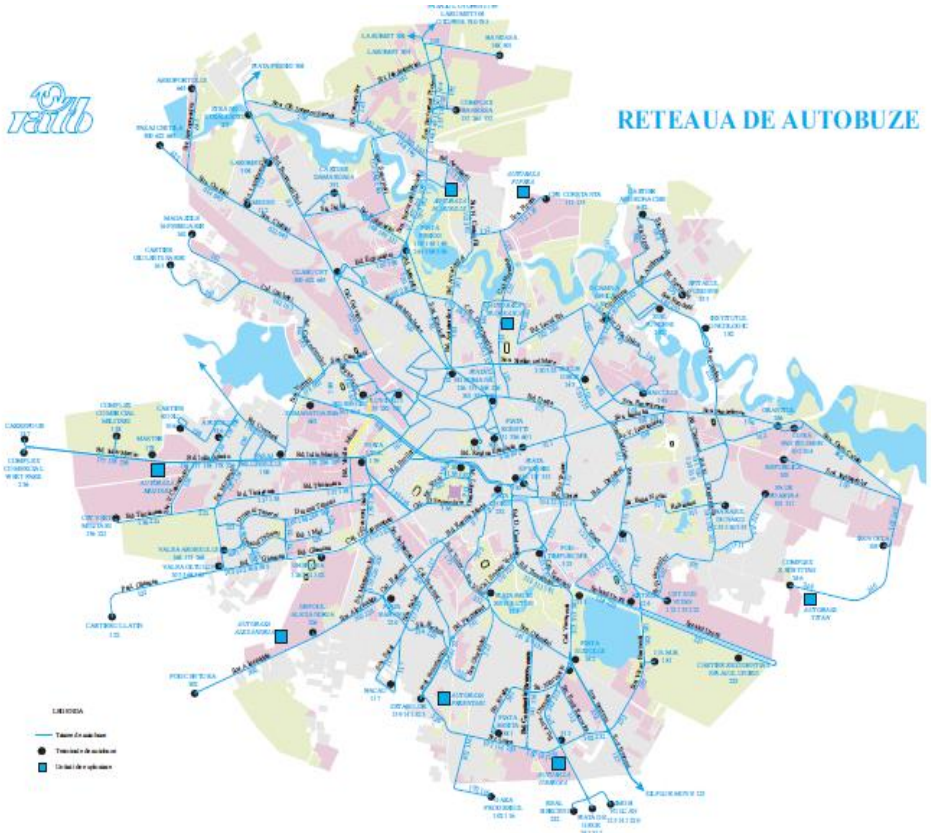

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FIGURE 5 – THE MAP OF METROREX

The transportation in Brasov:

Brasov is the capital and largest city of Brasov county. According to official apprasials of the National Institute of Statistics, the population of Brasov was on 1 January 2009, of 278,048 inhabitants. Brasov has an area of 267.32 kmp and a population density of 1064 inhab/kmp.

Brasov has over 550 named streets, totaling more than 260 km in length. Street network is highly developed, being provided public lighting, traffic light for main intersections or the achievement of roundabouts, their sewerage and sanitation.

In Brasov there is an extensive network of surface transport, see Figure 6, travelers can opt for bus, trolley and minibus.

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The activity of urban public transportation of passengers is displayed as follows:1. Buses - 23 routes with a total length of 406.950 Km simple way in which:

- on weekdays, 23 routes on this schedule 5.30 - 24.00;
- holidays, 20 tracks on this schedule 6.30 - 22.30.
- Vehicles - the six tracks with a total length of 177.4 km of the simple way:
- In the weekdays, 6 routes on this schedule 5.30 - 24.00;
- holidays, 6 routes on this schedule 6.30 - 22.30.3. Minibuses - 12 lines with a total length of 115 km.

The network transportation composition was made based on the idea that any traveler can reach on foot, from home to the nearest station in maximum 5-10 minutes, which would correspond to an average rate, to a distance of 350 m .

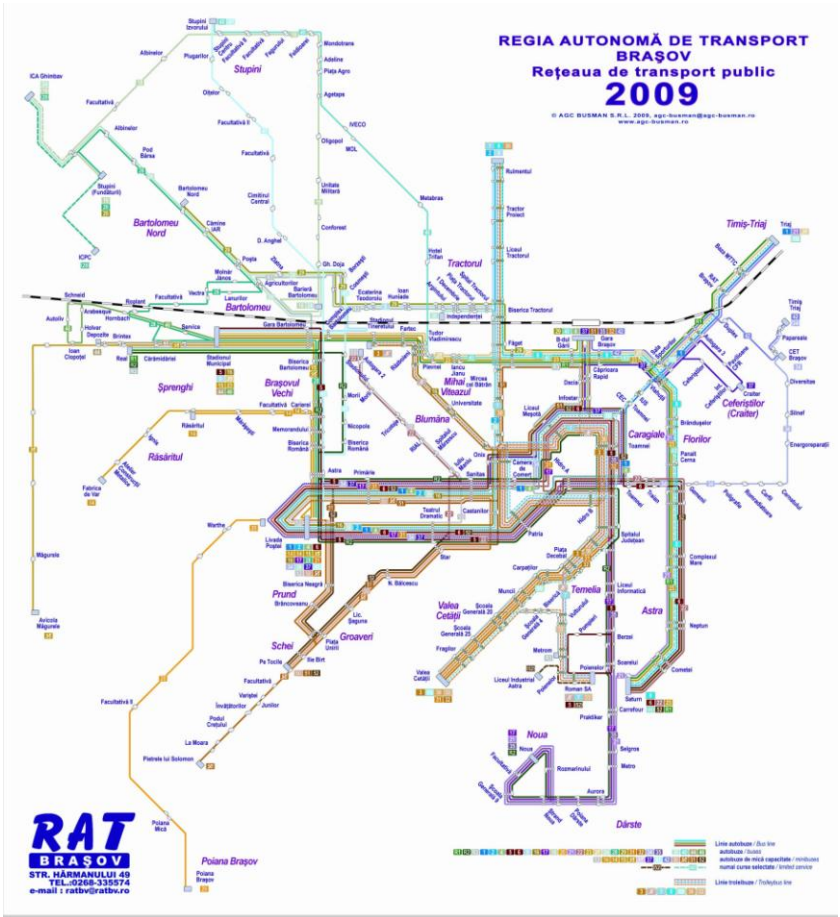

FIGURE 6 – THE MAP OF PUBLIC TRNASPORTATION IN BRASOV

The transportation in Timisoara

Timisoara is the capital and largest city of Timis county, located in western Romania. According to official appraisals of the National Statistics Institute, the population of Timisoara was, on 1 January 2009, of 312,113 inhabitants, which ranked him third by level of population in Romania. Timisoara has an area of 130.5 kmp and a population density of 2622 inhab/kmp.

At the present time the public transportation network of Timisoara connects all the city neighborhoods. In Timisoara, the development of public transportation is only at the surface, using three types of means of transportation: trams, trolley buses and buses. In Figure 7 is presented a transportation network map of Timisoara.

The inventory park of Timisoara's transportation direction is composed of:

trams: 130 motor wagons and 103 motor cars trailer, the average number of trams in circulation is 60. With trams is ensured the transportation on 10 lines, of which routes have a total length of 134.3 km. The trams are carrying 50% of all travelers; trolleys: 50, which ensures passengers' transportation on 8 lines of circulation with a total length of 70.46 Km. The trolley is carrying 27% of all travelers; Buses: 89, which ensures passengers' transportation on 11 urban lines with a total length of 118.7 km, and also 7 convention lines of 278 km length. The buses carry 23% of passengers.

Monthly the RATT transports an average of nearly 9 million passengers, the direction means of transportation going through more than 800,000 km.

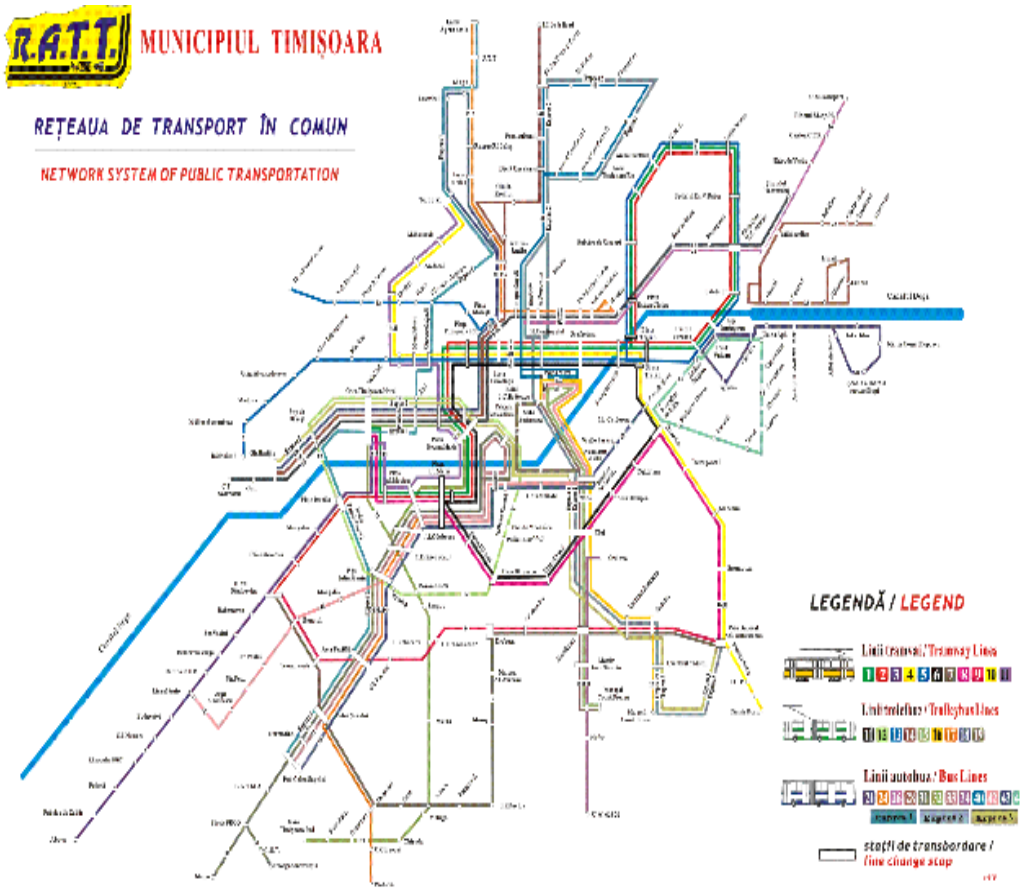

FIGURE 7 –THE MAP OF PUBLIC TRANSPORTATION NETWORK IN TIMISOARA

The transportation in Constanta

Constanta is the capital and largest city of Constanta county, located in the extreme south-east of Romania. According to official appraisals of the National Institute of Statistics, the population of Constanta was, on 1 July 2009, of 302 040 inhabitants. Constanta is crossed (from N to S and from E to V) of two European roads: E60, linking Bucharest to Constanta and E87, which connects Bulgaria with Constanta by Vama Veche. Also, the city is crossed by the following roads: DN 2A - Tomis Blvd, DN 39, DN 3, DN 3A-C, DN 3C. In Brasov there is only one development system of public passenger transportation, the surface transportation, organized with several means of transportation, such as: minibuses, buses and trolleybuses. The internal network road of Constanta totalizes 410 km,of which 320 km medium and light traffic streets and 90 km heavy traffic streets. Transportation is provided in 80% by Regia Autonoma de Transport Constanta (RATC) ,directing subordinate to Municipal Local Council of Constanta, on the market also existing other private operators. Currently RATC has 25 tracks, as shown in Figure 8: 23 bus routes and 2 trolley routes. RATC held until 2008 also 3 tram lines,

which were completely abolished, however. RATC has in service a total of 152 buses of various types: 12 DAC 112UDM buses, 10 twin-deck buses Ayats brand with Volvo engine and 130 MAZ buses and 20 trolleybuses: 15 Rocar and 5 DAC. The number of stations distributed by type of means of transportation is 48 for trolleys and 503 for buses and the average length of a distance traveled by a motor vehicle in operation is 169 real km daily, when reffering to trolleys and 179 real km every day for buses.

In 2008, the total number of passengers transported has exceeded 65.5 million.

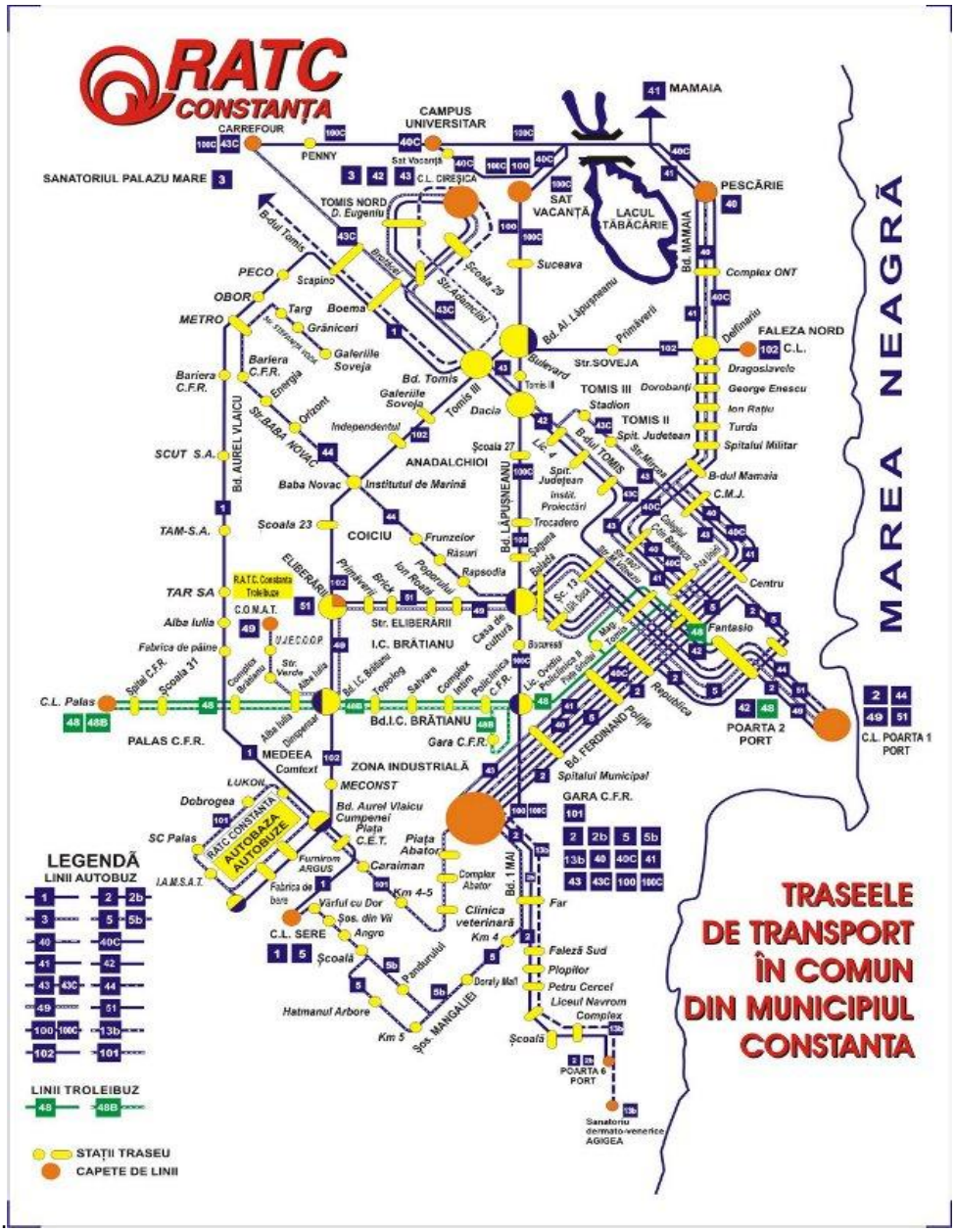

FIGURE 8 – THE MAP OF PUBLIC TRANSPORTATION NETWORK IN CONSTANTA

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The transportation in Iasi

Iasi, located near the eastern border of Romania, is the capital of Iasi county and the main urban center in northeastern Romania. The population of Iasi, in the year 2010, was of 308.663 inhabitants (second after Bucharest), with a total area of 95.3 kmp and a population density of 2173.8 inhabitants/kmp, the length of the urban streets totalizing 503 km. In Iasi the public transportation of passengers takes place only at the surface with several types of transport: tram, bus and minibus. The common transportation in Iasi is provided in the largest proportion of Regia Autonoma de Transport Public Iasi (RATP Iaşi) and in a small proportion by Unistl, a private operator of public transportation with buses and minibuses. In Figure 9 is presented a map of public transportation routes of Iasi.

Currently RATP Iaşi has:

8 tram routes, totaling 129.92 km; eight bus routes, totaling 196 km, plus another 4 routes Unistil; 4 minibus routes, totaling 74.6 miles, plus another 2 routes Unistil. 8 tram routes, totaling 129.92 km; eight bus routes, totaling 196 km, plus another 4 routes Unistil; 4 minibus routes, totaling 74.6 miles, plus another 2 routes Unistil.

At the present time the direction inventory park consists of:

- 150 trams;
- 50 new MAZ buses, 30 Renault R312 buses and 9 Mercedes O405 bus;
- 50 minibuses.

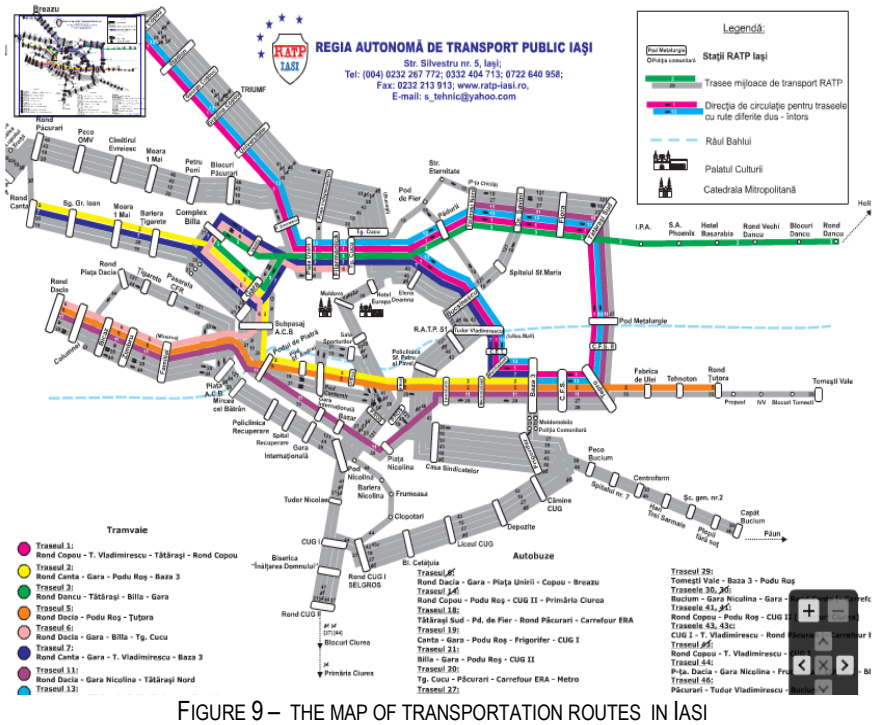

FIGURE 9 – THE MAP OF TRANSPORTATION ROUTES IN IASI

Ratp iasi is the most expensive means of public transportation in, which can me seen in the table below:

TABLE 3 – THE TARIFS ON DIFFERENT DIRECTIONS IN ROMANIA

	1 trip	2 trip	1 line/month	2 line/month	All lines/monthes	Set of 10 trips	Student/1 linie/luna
Bucuresti	1.30		30,00	35,00	50,00		15,00
Iasi	1,90	3,70	63,00	78,00	97,00	16,00	56,00
Constanta	1,75	3,50	55,00	80,00	110,00	17,50	
Brasov	1,50	3,00	35,00	60,00	80,00		
Timisoara	1,6	3,00	53,00	74,00	93,00		

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